Henry Harap

Price : $1.00.

CURRICULUM JOURNAL

Vol. 6 : No. 4. April 22, 1935.

THE WORK BOOK

Chapter	Page
Introduction . . . . . Henry Harap, Western Reserve University	2
I. The Evolution of Instructional Aids . . . . . H. G. Good, Ohio State University	3
II. The Role of Instructional Aids in Teaching . . . . Wendell Vreeland, Detroit Public Schools	**10**
III. The "Why" and "How" of Instructional Aids . . . . . S. A. Courtis, University of Michigan	14
IV. An Analysis of Certain Purposes and Merits of Work Book Materials . . . . . Arthur I. Gates, Teachers College, Columbia University	20
V. The Work Book and the Teacher . . . . . Angela M. Broening, Baltimore Public Schools	26
VI. Current Uses and Effects of Work Books . . . . . Bess Goodykoontz, U. S. Office of Education	30
VII. The Improvement of Work Books . . . . . L. J. Brueckner, University of Minnesota	41
VIII. Selected Bibliography on Work Books . . . . . Caster V. Good, University of Cincinnati	45

SOCIETY FOR CURRICULUM STUDY

Office of the Chairman of the Executive Committee
Western Reserve University
Cleveland, Ohio

SOCIETY FOR CURRICULUM STUDY

A professional organization including the following workers: curriculum directors in county, city, and state school systems; other administrative and supervisory officers who are primarily interested in curriculum; classroom teachers who are working on special curriculum problems; research workers and authors of curriculum studies; college and university instructors; curriculum workers in non-school organizations; and others who are especially interested in this professional field. Membership upon application to the Executive Chairman. Annual dues $2.00 per year, including the Curriculum Journal.

EXECUTIVE COMMITTEE OF THE SOCIETY

Henry Harap, Chairman
Western Reserve University

H. B. Bruner
Teachers College, Columbia University

H. L. Caswell
George Peabody College

C. L. Cushman, Vice-Chairman
Denver Public Schools

Bess Goodykoontz
United States Assistant Commissioner of Education

Paul R. Hanna
Teachers College, Columbia University

Emil Lange
Long Beach Schools

CURRICULUM JOURNAL

Published about eight times a year by the Society for Curriculum Study.

Henry Harap, Editor
Western Reserve University, Cleveland, Ohio

Samuel Everett, Associate Editor
Lincoln School of Teachers College, Columbia University, New York City

CURRICULUM JOURNAL

Vol. 6 : No. 4. April 25, 1935.

THE WORK BOOK

Prepared by

H. G. Good
Wendell Vreeland
Arthur I. Gates
Angela M. Broening
Bess Goodykoontz
L. J. Brueckner
Caster V. Good
S. A. Courtis, Chairman.

INTRODUCTION

In view of the enormous output of workbooks, the amount of critical literature is surprisingly small. Curriculum workers who have been considering the use of workbooks should welcome an appraisal of these new learning instruments.

The workbook was swept in on the tidal wave of individualized learning. It is a very ingenious means of adjusting learning, largely verbal in character, to individuals. It makes it possible for the pupil to progress at his own working rate. In certain schools, individualized learning has become the exclusive occupation of the pupil for a good portion of the day. In general, relatively few persons have questioned whether the workbook experience is founded on a fundamental theory of learning.

The workbook has been accepted too easily into the family of printed materials. It was a boon to the teacher to whom oral presentation came hard or to the teacher who had difficulty in holding the interest of a class. It was so easy to put into practice. It involved no mastery of new teaching techniques. It was a very effective means of keeping a class busy. It reduced teaching to a simple supervisory function. It is no wonder that the workbook spread like wild fire. Its very popularity makes critical appraisal desirable.

What follows is the most comprehensive evaluation of the workbook which has been made thus far. It is our hope that further inquiry into this subject will be stimulated by the report. Dr. Courtis and his colleagues deserve the gratitude of the many users of workbooks.

Henry Harap

CHAPTER I

THE EVOLUTION OF INSTRUCTIONAL AIDS

H. G. Good, Ohio State University

Types of Aids

Instructional aids are of two kinds and first in importance are those which stimulate or arouse experience. If a desired experience is new it must be produced. To give a child a new first hand experience requires an environmental situation, such as a school garden, laboratory, shop or concrete objects, whether these are brought into the school or are studied in nature. Instruments also come under this head; instruments of operation, as a saw or a test-tube; of observation, such as a microscope; and of precision, say a steel tape.

But education is the process not only of producing but also of organizing desirable experience so that it may be understood and controlled. For the understanding of experience symbols are effective means; and symbols are, therefore, the second kind of instructional aids. Symbols include language and all special notations like those of mathematics, logic, drawing and what-not; and with the symbols themselves we study also their carriers such as books, blackboards, moving pictures and the radio. Although some book-forms are new, as is the work book which this bulletin particularly considers, yet in general books are the oldest, the most widely used and so far the most indispensable aids to instruction because they are the best carriers of the symbols by which we are enabled to understand experience.

Aids in the Use of Language Symbols

The Wax Tablet

For more than one reason it will be wise to begin with ancient Greece and to follow the Western tradition in this narrative. The Greeks acquired an alphabet from the Phoenicians and had developed the art of writing by the seventh pre-Christian century certainly, and perhaps, as Frederick Kenyon of the British Museum believes, in the time of Homer.[1] Writing and epic literature; the recitation of lyric poetry with self-accompaniment on the lyre; and the physical exercises of the palaestra formed the main activities of the Greek schools in classical times; and school equipment as may be seen on Greek vases was appropriate to these activities; a book or two, a wax tablet and stylus, a lyre, a ruling square and in the palaestra, the javelin and discus, boxing-thongs and jumping-weights, a pickaxe to loosen the ground of the jumping-pit and a strigil for cleaning the skin after the exercises were the chief items. The Greek school and its equipment were equally simple.

---

[1] Frederick G. Kenyon. Books and Readers in Ancient Greece and Rome. Oxford: Clarendon Press, 1932. 136 pp.

For hundreds of years, there were no children's books or school books in the modern sense. The child, or at least the teacher, had a copy of Homer or another literary text, written throughout in capital letters, without divisions between the words, without any punctuation and, of course, without chapter or verse divisions. Such improvements were developed in the Middle Ages and completed with the development of printing. For instance, pagination and head-lines were introduced at Cologne in 1470. For exercises the pupils used scraps of unglazed pottery when available and more regularly, in both Greek and Roman schools, the wax tablet. These tablets were thin boards, hinged along the side like a modern book, the inner surfaces being covered with a film of wax. The writing was done with a stylus. A lesson, dictated by the teacher, could thus be preserved until it had been learned; and then the tablet could be used again for the next lesson.

The Roll

The ancient book was written by hand on papyrus and on one side only. Papyrus is too orittle to permit folding and stitching, hence the manuscript was rolled, like a window-shade, the writing inside, upon a rod or umbilicus. Convenience of handling determined the size of the roll; and the usual length of a roll may be seen by looking at the divisions of an ancient work such as the twenty-four "books" of Homer. Such a roll is sufficiently convenient for continuous reading. It is held in the right hand and as it is read it is rolled up on another umbilicus held in the left hand. When the reading is completed the whole book will be on the new rod with the beginning--the title-page, if there were one--on the inside. Before it can be read again it has to be rolled back upon the original rod. That is not the worst of the matter. The roll is a very inconvenient form of book for reference work. Imagine an index, a dictionary, and encyclopedia in the form of a roll! and you will see why the ancient school had no reference works; and why ancient writers quote from memory and often incorrectly.

The Codex

The roll disappeared with papyrus and the codex came in with parchment. This new form, suggested possibly by the hinged wax-tablet, was an invention of importance both to school boys and to scholars because it added convenience of reference to convenience in continuous reading. Parchment also greatly increased the durability of books. But these advantages were nullified, at least in part, by its costliness. Books, often elaborately embellished, became the rare and treasured possessions of the rich or of corporations such as the monastic orders.

The Modern Book

Paper and the printing press came to remedy this great defect of parchment. Books now became cheap. Corrupt texts -- one of the banes of medieval study and teaching -- could now be avoided because all copies of the same impression were alike. The spelling, which had been so irregular that alphabetizing was hardly practicable, was made uniform by the printers. Cheap paper also made possible the reorganization of material and practice exercises of every kind. Books were now illustrated. The grand results of these inventions of the Middle Ages and the early Renaissance were more and cheaper

books, handier and more accurate books, books with headings, paragraphs and other helps to the eye, text-books often with illustrations and books for reference such as dictionaries and encyclopedias in addition to the older books for reading. Paper and printing, two inter-dependent inventions, had produced a revolution.

The Dictionary

Of books to aid in the use of books, that is, books raised to the second power as one may call them, the dictionary is an important example. It grew out of the medieval glosses. The words in those lists were arranged in various ways: by authors, the most obvious and least valuable in general; by subjects, a type which led to phrase books and colloquies, a kind of school aid which Erasmus enriched with his genius; by the roots or origins of the words; and, by spelling, alphabetically, a purely mechanical and arbitrary arrangement but so convenient for reference that it became universal. The first English dictionaries were contemporaries of Shakespeare; and all the vast number and great variety of general and special dictionaries of English and other languages, of the sciences and the arts have been developed out of those early forms. Teachers have had a large share in their making.

The Magazine Index

We shall take down from the reference shelf only one other of these books raised to the second power: the magazine index. About ninety years ago a young student at an American college was elected librarian of his literary society. The society's magazine files could not be used for want of an index; the young man made an index in longhand which proved so useful that it was soon almost thumbed to pieces. The rest of the story must be read in its proper place.[2] That manuscript was the germ from which have grown Poole's Index, the Readers' Guide, the Industrial Arts Index and the other indexes to special and general periodicals. The invention of logarithms multiplied the life of the astronomer by a large coefficient; the invention of the periodical index has lengthened and made more efficient the lives of all who use books.

Other Aids

There are also beyond dictionaries, indexes, bibliographies and other reference words, excellent guides to reference works.[3] Certain types of work books fall in this class. These aids are books raised to the third power. Evidently a knowledge of books, of how to find the pertinent ones and how to use them when found, is one of the most potent of instructional aids.

---

[2]William Frederick Poole. Poole's Index to Periodical Literature. Rev. ed. Boston: Houghton, Mifflin and Company, 1893. Preface.

[3]Such as, Isadore Gilbert Mudge, Guide to Reference Books, Fifth ed., Chicago: American Library Association, 1929, 370 pp., and Margaret Hutchins, Alice Sarah Johnson and Margaret Stuart Williams, Guide to the Use of Libraries. Third Ed., New York: The H. W. Wilson Company, 1925, 251 pp.

Illustrations

Books contain not only words but also special symbols like those of mathematics and diagrams, maps, pictures and the like, each speaking a language but without using the common alphabet. Illustration came in with printing. We may ignore the exceptions to this statement. AEsop with many wood-cuts in several editions, Ptolemy's Cosmographia with a wood-cut map (1482), vernacular Bibles in several languages and many classical authors, all with many and elaborate illustrations came out before 1500. Perhaps these are not school-books although they were used in schools. However, The Ratdolt Euclid (Venice, 1482) with diagrams, the Calandri arithmetic (Florence, 1491) with a whole series of illustrated problems and the Widmann arithmetic (1500) with full-page illustrations and diagrams surely are school books. It could perhaps be shown that in the early days of printing the schools were as eager to use printed illustrations as we are to use the moving picture, which is itself the most modern and most effective form of illustration.

The Map

We have spoken of these aids-to-print as languages. The map may represent these languages for us because it can be read more universally than architectural drawings, mathematical equations or even music. We shall examine the development of the map because it provides another example of the increased power which comes from instructional aids and also illustrates the diversified techniques of the school.

Maps were drawn by Egyptians and Babylonians and some of these have survived. The Greeks determined the approximate figure and size of the earth and also collected from sailing directions and itineraries detailed information about portions of the earth's surface. Through the works of Ptolemy this science, though not in its most accurate, ancient form, was transmitted to Latin Europe and used by the great discoverers of the fifteenth century. At that time maps became more accurate and came to represent a larger part of the earth's surface. Printing and copper-plate engraving (c. 1460) made possible a new technique in map making. America is first shown upon maps in the early sixteenth century. Waldsee-Müller prepared a globe, the map for which was printed on gores. Globes of the earth and the heavens were made in pairs, whence the old phrase "instruction in the use of the globes." Conrad Celtes at the University of Vienna illustrated his lectures with globes in 1501. The same century saw the evolution of the atlas; but mechanical difficulties had to be solved before text and maps could appear in the same volume. Since that day maps have become not only more accurate and cheaper but also very much more specialized.

Not only the making of maps but also the educational use of them has greatly changed in the last century and a half and this has been an influence of importance in transforming the whole school. Rousseau, Pestalozzi, Ritter, Herder and more recent workers have declared for home geography, the direct study of nature and the making of plans and maps as preparation for the use of maps, an inductive and rational study of the earth as man's environment. Thus after centuries of effort along many lines, by speculation, exploration, exact measurement; by the invention of new projections and many symbols such as hachures and contour lines and by the use of new printing, engraving and

coloring devices; by photography from the air; and by the general progress of the sciences, the map in many kinds and for many purposes has been made available to the school. Like other useful inventions it has had a share in the transformation of the old school into a modern one, capable, we believe, of better achievements in the education of children.

Aids in the Use of Mathematical Symbols

The art which has become school arithmetic was carried on first by traders, builders and other practical men who used physical counters, the fingers, pebbles, notches on a stick or knots on a string, and these gradually found their way into schools. The instrument most widely used in Europe was the abacus. This manual arithmetic continued for several centuries during the great commercial revival which marked the Renaissance. Three changes were required before arithmetic could become a common school subject: (1) the more general spread of literacy; (2) the finding or inventing of a cheap and suitable writing material (provided by paper) and (3) the development of a convenient symbolism and of simple processes of computation, (supplied by the Hindu-Arabic notation). With the addition of decimal fractions, logarithms, the slide-rule and the calculating machines the art of calculation assumed its modern aspects. School practice, however, has not kept pace with business practice. There are reasons why in this field the school has delayed so long the introduction and the proper use of mechanical aids to computation with their increased accuracy and their relief from strain upon the attention in performing arithmetic operations. There <u>are</u> reasons but they are not good ones.

Those teachers who understand the sensory origins of counting and measuring have a guide to the teaching of primary arithmetic. Comenius suggested this use of visual aids and his disciples introduced it into the school. In the eighteenth century new instructional aids appeared in great variety; wall-charts, flash-cards with patterns of dots, marked splints for fractions and much else. Francke and also the Württemberg ordinance of 1729 mention the blackboard, an invention ultimately recognized as of great importance in the teaching of arithmetic and many other subjects, yet the blackboard does not appear in the United States until the following century; and Henry Barnard in 1839 said that its value as a teaching instrument was little understood. If we should now introduce and use in school a full complement of available instructional aids--simple measuring utensils and instruments, a simple computing machine and slide-rules--our instruction would be further improved.

Writing Aids

Arithmetic became a school art by first becoming a writing art which could be carried on with symbols made with a pen. This fact illustrates a basic trend in education: the school places an extraordinary emphasis upon the symbolical handling of experience. And this again suggests the importance of the writing arts not only in the origin but in the development of the school. Writing was long carried on with crude brushes as in Egypt and wherever papyrus was used, with a stylus on wax tablets, with a chisel on stone, with the square end of a reed in the wedge-shaped writing of Babylonia, with metal types in printing and for long centuries before and parallel to printing with a quill-pen. Only about a century ago the steel pen was invented and the newspaper

advertisements introducing this new tool form a curious body of educational evidences. The ordinary steel pen-point was closely followed by the early fountain pen, gradually perfected during the nineteenth century, and by the modern graphite pencil and the fountain pencil. The typewriter, an American instrument, came in about the period of our Civil War. Why should not every school be equipped with adequate copying machinery, carbon-paper, stencil, mimeograph and other devices? This latter question is made still more pertinent by the recent development of objective tests and of practice materials, contracts, lesson sheets, work books and the like. The new effort, hardly a generation old, to adjust instruction to individual differences and to measure objectively ability and attainment in school work is influencing both teaching procedures and teaching materials. It is coming to be recognized that individualized activities of study, measuring, and being measured are themselves educative.

Aids to Experiencing

We have devoted so much space to the evolution of symbols and their use in the school because of their great importance and also because this account is in introduction to a study of the work book which is itself a device for teaching the use of symbols; but no account of the evolution of instructional aids may leave out the other phase of development, the efforts of the school to use concrete things and instruments in providing new experiences. Such attempts, however, came late in the schools' history. For twenty centuries after the Greeks established schools, experience was taken for granted by teachers. Only in the last few hundred years have observation and experiment and practice with concrete things come into the school itself.

Object Study

Elementary schools under the influence of Basedow and Pestalozzi introduced object-teaching, home geography, construction work and even the project. Froebel caught the idea and about 1840 incorporated it into his kindergarten. The manual labor system of Fellenberg introduced it into the teaching of agriculture and various arts connected with agriculture. In this form it had a temporary success in America. Nature study and school gardens followed. The school museum, school exhibits and similar aids are modern expressions of the same evolution. Gradually progressive teachers at all levels have attempted to organize the direct study of the world of things.

The Laboratory

Modern science began in the Renaissance, became organized in the seventeenth century and came to be taught in the eighteenth and nineteenth. Clerk Maxwell in one of his whimsical moments defined a laboratory as a place fitted up for experimenting and filled with instruments which, at the time, are in the way. Out of the experimental laboratory, the teaching laboratory was developed: for chemistry by Thomson and by Liebig a little over a century ago; for physics about three-quarters of a century ago; and for the biological sciences about half a century ago. In the United States, Amos Eaton had an influential student laboratory for practical instruction in several sciences in 1825. The secondary school laboratory came much later although certain academies form exceptions in this time-scale.

Shops

The school shop was found in the early Realschulen of Germany; and its aims were from the first partly vocational and partly cultural. Manual training which reached us about sixty years ago developed into school instruction in the industrial, practical and creative arts. Laboratory and shop and every form of experimental and practical work have necessitated a vast expansion in the instrumental equipment of the modern school.

The Future

These are only a few examples of the many instructional aids which facilitate modern education. Evidently the school is a complex invention composed of a long series of subordinate inventions. Its power to produce the highly complex results which modern society needs is dependent upon the presence and skillful use of a large and varied equipment. To teach in the modern school is to play upon an organ with many stops and keys. By developing new devices or improving old ones it will be possible to produce still greater effects, but with the introduction of each new instructional aid of either type, maximum efficiency can be achieved only by making equal developments in the technique of using the new instruments. The trends of history suggest that the facilitation and mechanization of teaching through the invention and use of improved instructional aids will continue for many years to come.[4]

---

[4]Acknowledgment is made to School and Society for permission to borrow some sentences from a series of articles by the present writer published in that journal, issues for June 20, Oct. 10, 1931, April 30, 1932, and June 23, 1934.

CHAPTER II

THE ROLE OF INSTRUCTIONAL AIDS IN TEACHING

Wendell Vreeland
Supervisor of Research, Detroit Public Schools
and
Associate Professor of Education, Wayne University

There have been many times in the history of education when the ideal school was conceived as one in which the teacher uses a minimum of supplemental aids to her teaching. More than four hundred years before the Christian era, Socrates taught Athenean youth by merely engaging them in conversation as he met them upon the street. And early American tradition has idealized the instructional situation that pictures Mark Hanna on one end of a log with a pupil on the other. Perhaps it is not too much to say that modern educational theory and practice owe to these men, and others like them who might be cited, the current insistence that the living, moving, personal contact between teacher and pupil is the central fact in good teaching, and the common concern lest the modern teacher be submerged and lost beneath the flood of material contrivances which now fill the classroom, presumably as aids to efficient instruction.

This concern is not entirely without foundation. No school on earth has ever been so blest (or cluttered, if one prefer) with the objective fruits of inventive genius as is the modern American school. The very school building itself, and its equipment constitute a first illustration of the dangers and potentialities implicit in the material concomitants of instruction. It seems safe to assume that the American public has been willing to finance the construction of the modern American school and to purchase movable desks, adjustable window shades, slate blackboards, enclosed display cases, and so on, without end because it has been persuaded that such a school, equipped in such a manner, provides not only a favorable environment for, but actually the means to, more efficient teaching.

Ideally, it would seem, this might be true. The teacher who is free from the cares of fire-building, sweeping, dusting, board-washing, and so on, which went with the task of "keeping school" in the old days, ought presumably to be more free to attend to children's personal learning needs. Also, the pupils would seem to have unusually favored surroundings in the modern school. Conditions which contribute to health and physical well-being are much more adequately controlled than in the schools of former days. Libraries, exhibits, music halls, and art rooms provide much potential enrichment for the learning experience. And thus, instances might be multiplied.

The extent to which classroom potentialities are being realized can be discovered by a simple test. Let the teacher tabulate the time she spends in caring for physical equipment, when she might allow her pupils to share the responsibility she feels for its preservation and proper use. Let her accumulate the time she spends in tracking down the culprit who scratched the desktop or spilled ink on the floor, when she might have been focusing her atten-

tion on the needs of a maladjusted personality which found satisfying self-expression in such acts. Let her ask herself how much time she spends in preparing a "presentable" exhibit for the school's display case, when she might have been guiding boys and girls through the exciting experience of doing it themselves. In short, let the teacher measure the part of her day which she spends in activities which rob her pupils either of the personal attention she might have given them, or of opportunities they might have had for growth, and she will discover the extent to which she is allowing her material surroundings to defeat their very purpose.

This is perhaps stating the matter negatively. But many there are who prefer to take this view and who urge a return to the "good old days" of simplicity, when, they say, the teacher was free to work directly with and for children. Such a proposal is in the main quite unrealistic. The primary task of the modern teacher is clearly to take stock of the varied activities in which she must engage during the school day, to subject each of them to a searching re-appraisal, and then to organize her time and effort in such a fashion that she may have more, and not less, time for her pupils.

Even a brief survey of the teacher's activities, however, will reveal that other matters than the care and use of physical equipment must come in for re-appraisal. Some of these the teacher has accepted with much more resistance than she offered to the comforts and conveniences of the modern school plant. Yet today in many quarters these provisions for the facilitation of effective teaching are blamed for the disappearance of opportunities for personal attention to the pupil's needs on the part of the teacher.

Take, for instance, the administrative organization of a complex, urban, graded school. Here is a second illustration of how well-meant arrangements may be so misused that their purpose is defeated. Historically, all such provisions as those for "grading", for "flexible promotion", for departmentalization, and for special classes for atypical cases, were designed to promote, rather than to hinder, the adaptation of the curriculum to the needs of the individual pupil. These provisions were originally intended to increase the probability that the pupil would receive expert individual attention from his teacher.

In spite of this fact, there is today much criticism of these administrative devices. They consume the teacher's time, it is said, until there can be no "real" teaching; the teacher becomes, as it were, a glorified clerk charged with responsibility for a multitude of details. Or, these arrangements require that the teacher become a specialist in a subject-field, rather than an expert in ministering to the needs of pupils; it were better that a return be made to the old organization where one teacher taught all subjects to a single group of pupils, for then she must teach pupils more than subjects!

An even better illustration of the need for constructive re-interpretation of the relationship between instructional aids and the dynamics of effective teaching is to be found in the current American misuse of visual (especially printed) materials. Functionally, of course, the textbook, the work book, the lesson sheet, the supplementary reader, and all such materials must be classified with the school's physical equipment and administrative organization -- they are all means to the facilitation of the teaching-learning process.

None of them has any reason for being except as it increases for every pupil the probability that frequently he shall have the privilege of such personal attention as a Socrates or a Mark Hanna would have given him.

What is American practice with regard to the use of textbooks? Nearly forty years ago the Educational Commission of the City of Chicago published the following statement as part of its report:[1]

> The rigid requirement of certain textbooks for all grades unduly hampers the individual teacher, who has a definite problem of accomplishing certain educational results with a given number of pupils during a given period.

The Denver Survey of 1916 indicated the teacher's dependence upon the textbook even more clearly,[2]

> Whatever the teacher's ideas as to the purposes of the work, the methods to be employed, the things to be read, etc., practically only one course is left open to her; she must teach the textbook.

Erich Hylla, commenting in 1928 upon the contrasts he had observed between schools in Europe and those in America, says, "It is very significant that in place of our word, 'instruction-hour', almost always the term, 'recitation-period', is used."[3] The implications as to instructional methods in America are clear.

Work books, at least those which have generally been constructed in the past, very naturally fall heir to the malpractices which have arisen in the handling of textbooks. Work books have rather commonly been considered either as abridged textbooks, or as supplements to basal texts, or as actual substitutes for texts. Many of them have no doubt been developed deliberately with some such end in view.

The misuse of texts has not gone unchallenged. For every critic who has cried that the textbooks, and not the teacher, has become the real instructional agent in the American school, some one has usually arisen to point to the fact that this condition must not be charged to the textbook, as such. The problem is whether the worker can become so completely a master of his tools that he can realize increased opportunities for expression through their use.

Many people view the recent development of the work book as a direct

---

[1] Report of the Educational Commission of the City of Chicago, 1898. p. 144 -- quoted by William C. Bagley, The Textbook in American Education, Thirtieth Yearbook, Part II, National Society for the Study of Education, p. 8.

[2] Quoted by Bagley, op. cit., p. 8.

[3] Footnote, op. cit., p. 24.

attempt to provide a corrective to the ills produced by the misuse of other types of instructional aids. No appraisal of their worth or of their effectiveness in accomplishing this purpose can be complete without a review of the potentialities seen by these people in this most modern of teaching devices. In barest outline, the criteria of the good work book might be set up as follows:

Other things being equal, the good work book is the one which:

1. Utilizes completely the findings of the scientific study of the learning process;
2. Utilizes as many as possible of the materials and opportunities for experience which are available;
3. Provides adequately for maximum growth on the part of all learners, no matter what their types or general levels of maturity;
4. Stimulates in wholesome ways the assumption of responsibility by the student for all aspects of his work;
5. Provides effective training in the technique of self-diagnosis; and
6. Fosters an intimate personal contact between student and teacher.

In the end, then, the work book must be viewed as one expression of a long-continued search for ways to liberate the teacher from the restrictions which encompass the teaching act in order that she may minister directly to the needs of her charges. The work book, considered thus, is but one invention in a long series which marks the evolution of instructional aids. That it may fall into the misuses which have marred the fruitfulness of other inventions with a parallel purpose, such as the physical equipment of the classroom or the administrative organization of the school -- there can be no question. That it holds possibilities for the further improvement of instruction is the faith of many who have worked for its development. That enough has already been accomplished to give reason for such a faith, is now a fact.

But the realization of these potentialities depends upon a clear-eyed vision of their connection with a most desirable pupil-teacher relationship, and a willingness on the part of every teacher both to re-appraise all those activities which in the past have gone by the name of teaching and to deliberately conserve her time and energy for matters of most worth. When teachers catch this vision and show such willingness, it will be discovered that more aids, and not less, are but the modern means to the re-vitalization of teaching. The Socrates of the future will use every available means to make his instruction effective.

CHAPTER III

THE "WHY" AND THE "HOW" OF INSTRUCTIONAL AIDS

S. A. Courtis
University of Michigan

"All the world's a stage."

"This wide and universal theater
Presents more woeful pageants than the scene
Wherein we play in."
- As You Like It -

Purpose

Most astounding is the ease with which intelligent human beings miss completely the larger implications of their daily round of common place activities. In the main, the actors in life's majestic drama strut their bits like human puppets moved by unseen hands. To the average man or woman, the purposes, emotions and events of the moment seem all important; in reality however, "the play's the thing"; the slow onward sweep of evolutionary progress.

For example, whether or not a teacher decides to use a work book is a small matter; but that thousands of teachers, here, there and everywhere, turn to work books and other instructional aids is a very important matter indeed. For it reveals an evolutionary tendency in education which bids fair eventually to transform completely our ideals of what education is, and how it ought to be conducted. That the readers of this bulletin may have both background and perspective this chapter will discuss the larger implications of the changes in education which have taken place during the last two hundred years, trends of which the work book is one objective expression.

Education as Adjustment

As an activity, education is an attempt to satisfy an enduring human need. So long as children are born immature and helpless, so long will education be a necessity and a problem. Education facilitates adjustment to environment. The progress of the race steadily increases the number and the complexity of the adjustments a new individual is called upon to make and guarantees, that education will continue to grow in magnitude and importance through the ages as it has in the past. Education as an activity of the moment is one thing; education as a general but specialized function of existence is quite another. Increasingly it is coming to be recognized that school training is but one element, or one aspect, in a process of general adjustment which is both biological and sociological in nature.

Among primitive people, no such conception of education as a natural process occurs. Subject-matter and methods are dictated by the needs and wishes of the social group. The goal is the transmission of the social heritage

with indoctrination, regimentation, subordination of the individual to the group, and the maintenance of the status quo, as desired outcomes. Such a concept of education leads one to regard learning as imitation or memorization; it defines teaching as presenting drilling, testing, and disciplining. Mussolini, Hitler, and the whole new crop of modern exponents of the doctrine that control of the many should be exercised by the few, supply vivid illustrations of what education inevitably becomes when man ignores its maturation and evolutionary aspects, and considers it merely as a means whereby he may achieve his dominant purposes.

Fundamental Problems

Among those bent upon the improvement of education, two basic questions continually arise, the answers to which may be gleaned from the story of human progress: (1) toward what goals should educational effort be directed? (2) by what means shall these goals be achieved? Philosophy and Science supply answers. The type of work book one chooses, and the way in which work books are used are determined by the answers one accepts.

How Changes Take Place

However, the teacher in the classroom is seldom concerned with evolutionary trends. She is a specialized agent, preoccupied with the mastery of an immediate, complex, and difficult situation. She is hired by society for specific purposes; her work is judged by standards over which she has no control. She deals with children for relatively small and specific portions of their total training period and in general, neither knows nor cares any more about the general evolutionary development of the educative process than the soldier in the front-line trench during an attack by the enemy knows about the course of the battle as a whole. Progress impinges upon the teacher as a rule only in terms of the adoption of devices or of specific changes in practice. The work book is a case in point. It is adopted by the teacher either because it serves a felt need, or because some superior has decreed work books are to be used.

Consequently, the forces which change classroom practice operate indirectly and often blindly. On the one hand, social progress slowly changes education. Evolution in social ideals ultimately modifies the demands the public makes upon its schools. The trend of educational idealism, therefore, is to be sought in the history of social evolution. On the other hand evolution in school organization, means and methods takes place through those responsible for the administration of the schools. Administrators seldom have either the time, or the inclination, for reflection. Under the pressure of new social ideals, the reaction of an administrator is to make objective changes and adjustments in organization and procedure. He alters the conditions under which a teacher works, and tends to take it for granted that the change <u>in the way she works</u> will inevitably follow.

It might be thought that theoretical and interpretative courses during the training period of new teachers exert a powerful directive influence upon changes in classroom practices. Undoubtedly they have some effect. But professors in colleges and universities are themselves such poor exponents of the new doctrines they preach that their influence as a whole is small. To the author it appears inevitable that the age-old natural process of

"survival of the fittest" should really decide important issues in a democracy. The examples of exceptional teachers or superintendents are imitated and each given type of practice spreads. Eventually the fittest survives.

Intelligent Planning

Today work books are favored by administrators in general as visible evidences of specific achievement, and of adjustment to individual differences. Content and method to them are at present matters of small concern. Not so with teachers! There is now going on throughout the country the usual awkward, blundering trial-and-error lead to a perfected type of instrument and to an efficient method of use. However, much of the present waste could be eliminated, and the process as a whole speeded up, if all could view the situation in perspective and plan intelligently. Therefore, let us trace briefly (1) the trends of progress in social evolution, (2) the contributions of science to education, and (3) the resultant elements of achieved progress in education, in order to obtain a basis for estimating the significance of the trend toward the use of work books and similar instructional aids.

Respect for Personality

The trend of social progress is best represented by the trends in democratic idealism, the increasing realization of the worth of personality, and the persistent desire for freedom. Let us take Rousseau as a starting point, and his demands for a "return to a state of nature", his protests against the restrictions upon free growth through the limitations imposed by a formalized and highly artificial society. We can easily trace by political revolutions and by changes in social practices the spread and growth of democratic ideals. The American revolution with its emphasis upon the inalienable rights of the individual, and its opportunity for self-government, the French revolution with its slogan of liberty, equality and fraternity, the Russian revolution with its democratization of financial control, and its revolt against the restricting influences of those two oldest of human institutions, the home and religion, all tell the same story of the insatiable desire of the human spirit for opportunities for self-realization and progress. Human-kind is turned away from exploitations, indoctrination, fixation and disciplinary restrictions toward the adventure of living freely, widely, richly, joyously. Free men value highly, initiative, self-direction, courage and other individualistic powers. In school the function of the work book, and of all similar instructional aids, is to provide opportunities for the individual pupil to take on a larger share of self-determination of the learning process. From this point of view the larger significance of the work book is that it provides in school experience for the individual which <u>exactly parallels in character</u> one of the evolutionary trends of evolution.

Socialization

On the other hand along with the dominant trend to magnify the individual, there has been a major current under the surface, working subtly but gathering power and today manifesting itself in many ways; namely, the trend toward the socialization of the individual. The Civil War was a struggle to preserve the Union, a contest which was decided in terms of social control. The group won the right and power to control its individual members as may be

necessary to maintain its own existence. Another factor of the same type has been the development of the machine. The machine age has, very subtly, made us, individually, whether we will or no, interdependent and has clipped the wings of personal freedom of action in a way the rugged individualist finds most disconcerting. The movie, the radio and the airplane are similarly extending the range of personal social consciousness and are broadening the bases of personal sympathy and judgment. Our very concern for the sorrows and miseries of the underdogs in life struggles has also tended to make us all socially-minded to a greater degree than formally. The World Court and the League of Nations are formal though germlike expressions of this same tendency toward socialization and centralization which seems to be the ultimate goal of evolution. The use of the work book does not contribute directly to this trend.

Individualization

A different type of major influence which has expressed itself in work books is the growing recognition of the value of scientific knowledge. Experimental science settles problems, not by the fiat of dictator but by the discovery of the way nature operates and by intelligent use of such knowledge. The physicist, the chemist, the astronomer, the biologist never attempt to dictate to nature. They accept as authoritative only that which works. They submit their assumptions and generalizations to the acid test of prediction and experimental verification. As a result, the rate of progress in the development of control over matter and energy has been speeded up enormously.

The first experimental laboratories for the scientific study of human nature were established less than two generations ago. The first calibrated instrument for the measurement of an educational product was published less than one generation ago. Nevertheless the contributions of scientific effort to educational aims and methods seen in perspective have been profoundly transforming. All the world knows today that individuals differ so profoundly that each is a law into himself. The movement for the adjustment of school work to individual differences has expressed itself in many ways. We have today the nursery school, the kindergarten, the primary school, the elementary school, the intermediate schools, various sorts of high schools and a wide range of colleges and technical schools. Within each type, equipment and materials have been adjusted and enriched in terms of the needs of the individuals who use them. Within the classroom ability grouping, differentialed assignments and curricula, the development of self-instruction, self-corrective lesson sheets, contract units of work and similar devices of which the workbook is but one illustration, furnish and impressive record of the unconscious response of school administrators and teachers to the utilization of the findings of scientific effort. The workbook is one means of individualizing instruction.

Types of Workbooks

A "good" workbook therefore, may be either one with well chosen subject matter so organized as to facilitate its acquisition by the learner, or one which provides the pupil with opportunities for the creative exercise in seeing problems, purposing to solve them, plannins solutions, carrying them out, appraising consequences, and generalization for future improvement and control.

Methods of Use

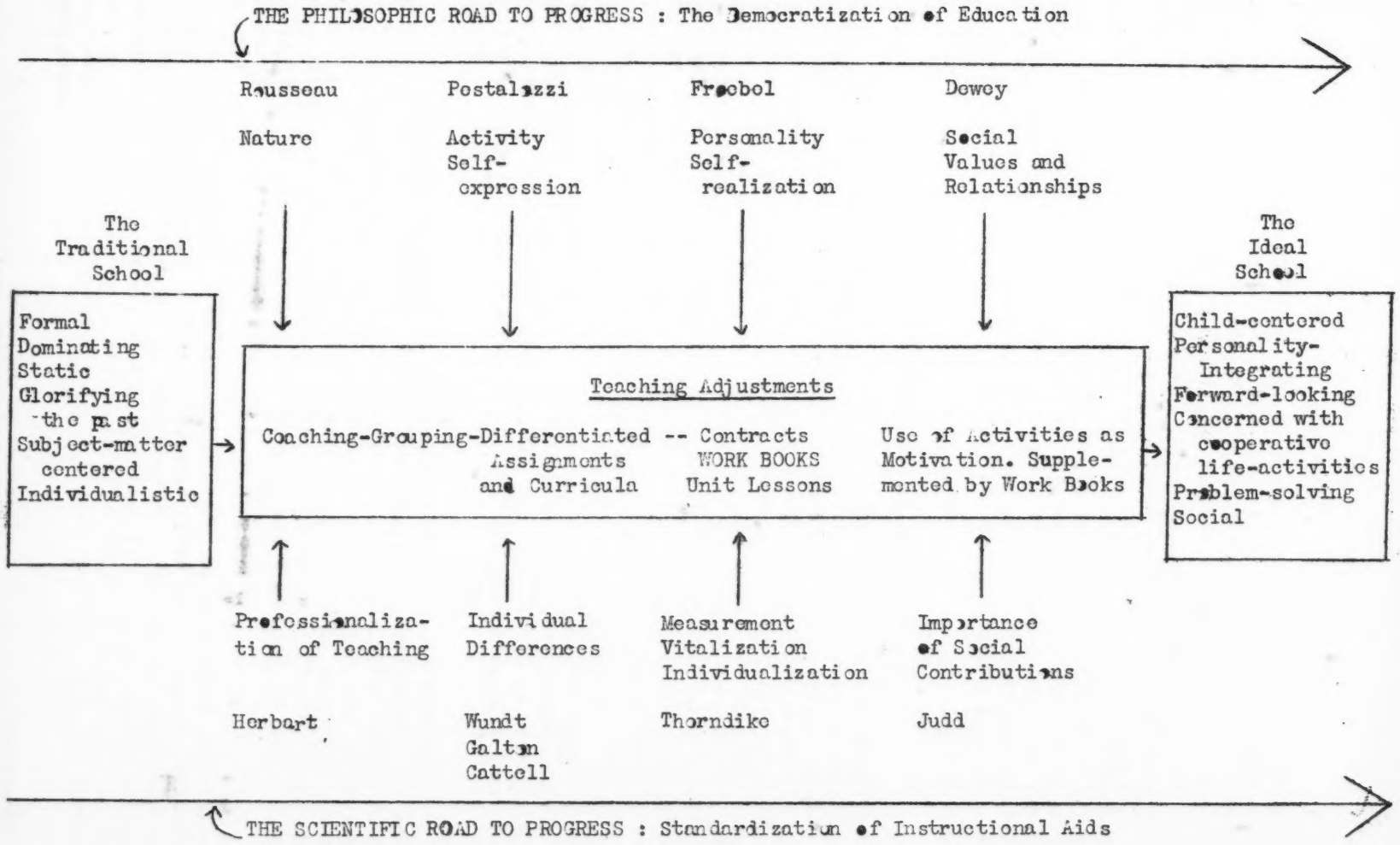
Needless to say, the method by which workbooks are used vary correspondingly. To one group, the workbook represents merely a series of convenient or desirable tasks, the doing of which by the pupils is to be rigorously directed and supervised by teachers in accordance with adult standards of skill and achievement. To the other group, the workbook is a service tool to be used by the student in ways, by methods, and at times dictated by his own needs and desires, just as an adult might use them in real life. Similar fundamental difference in attitudes and procedures are evident at every point of comparison. Indeed so great is the desire on the part of the extremists of the "progressive" group to provide for freedom and self expression that they even question whether it is possible to organize subject matter helpfully for the individual without restricting or directing his development. In this bulletin traces of the conflict of views are evident and serve as faint reflections of the evolutionary conflict now in progress in the schools.

Summary

The message of this chapter may be summarized by saying that there are two major pathways to progress, the philosophic and the scientific. The philosophic contributions modify social idealism and lead to change in the social demands made on the school by citizens. The scientific contributions are seized upon by administrators and used to devise organizations and instrument for meeting the changed social demands. Meanwhile in the class room the teacher, played upon by both sets of influences, struggles to harmonize as best she can the inevitable conflicts and to utilize the new ideas in her own way. Workbooks of many different types, designed for different ends, are published in large numbers. Therefore, each person, whether parent, adminstrator or teacher should choose workbooks and use them by methods in accord with his present philosophic development, but he should also strive to understand the general evolutionary movement and to grow in accordance with it.

The entire story of this chapter is presented in sketchy outline in the accompanying diagram. Men and events have been chosen for illustrative purposes only and many important contributing agencies, such as physchiatry have been omitted. As a whole, however, the diagram may serve to bring the distinctive place and function of the workbook into bold relief, and to indicate its relationship to the ideal activity school of the future.

DIAGRAMMATIC SUMMARY OF EDUCATIONAL PROGRESS



CHAPTER IV

AN ANALYSIS OF CERTAIN PURPOSES AND MERITS OF WORKBOOK MATERIALS

Arthur I. Gates, Columbia University

To give some notion of the uses and possibilities of workbook materials, a list of some of the purposes for which they have been arranged will be presented. First, however, it should be pointed out that the writer does not confine his concept of workbook materials to those embodied in the supplementary paper-covered "workbooks" of exercises, problems, questions, etc. which are often the only things listed under this title by publishers. Some of these, unfortunately, are not very good examples of learning materials. By workbook materials the writer would include all forms of matter, however bound or distributed, which are produced by printing. Some of the best examples consist of materials all bound within the cover of a textbook. Others appear in such forms as standardized or diagnistic tests and practice exercises; some on separate cards or sheets. With these reservations in mind, the following educational purposes may be seen as part of the program of improving teaching by the use of printed materials.

Some Illustrations of Workbook Purposes

1. Preparatory Material -- In some cases the workbook consists chiefly of material variously assembled to serve as preparation for a textbook, which in itself is incomplete or too difficult without preliminary work. Thus, the workbook may give the background and related information which serves to orient the pupil and whet his interest for a selection. In other cases, the preparatory material provides practice on items needed to handle the textbook selection with understanding and interest. The definition of terms and explanation of concepts in content subjects, the introduction of the new words in primary reading are illustrations. In some cases, the material takes the form of directions or suggestions concerning methods of studying or taking notes or looking for specific points or recording data concerning a particular issue or noting items to be used in later discussions or problems. In general, such workbook materials are designed to give in carefully developed form what a skillful teacher might give in oral form before taking up a textbook lesson. While workbooks restricted to preparatory material are rare, books in which this type of content is combined with others, to be mentioned presently, are increasing in number.

2. Collateral Materials -- Workbooks may take the form of collateral material which is to be utilized during the study of an assignment. In some cases, these resemble more or less extensive footnotes in which words are defined, illustrations given, items expanded, references cited, and various helpful hints given. Hints for studying, making notes, testing or applying a statement, practicing an act, applying a general rule, as when material accompanying a spelling list a rule is cited, and the like are thus made available during the course of the work on a lesson.

In the development of both preparatory and collateral material, it may be assumed that practically anything a teacher gives in the way of explanations, instructions, and directions can be put in printed form either in a supplementary workbook or, often better, in the text itself. When the latter policy is adopted, the instructions may be more carefully and fully worked out and the textual material is likely to be developed in more suitable form for study as a consequence.

3. Supplementary or Follow-up Material -- Present day workbooks are more often devoted primarily to supplementary or follow-up material than to

either preparatory or collateral. They are designed to be taken up after the pupil has read a lesson, seen a demonstration, had some experience with a process or skill. They are constructed to give further information, provide further practice or study, test the degree of mastery, or suggest some form of additional use of the information or skill introduced. The supplementary activities thus provided are numerous and difficult to classify, but certain ones should receive special mention.

a. Practice -- In the older methods, the pupils either guessed what they should learn or waited for the teacher to tell them and then learned in uncertain ways, or else the teacher was expected to put exercises on the board or otherwise to provide them. The workbook policy represents an effort to provide practice materials and suggestions designed to make what would otherwise be "trial and error" learning definite, foolproof, economical, and interesting. The pupil is given printed exercises which enable him to learn the essential things in the best form, and to the desired degree. Many "workbooks" consist largely of practice exercises as in arithmetic, spelling, or writing, which provide a systematic development of skills. In history and content subjects, exercises are provided to produce mastery of the facts or principles judged to be worthy of it. Some of these organizations make provision for quick and accurate detection of successes and errors, well-distributed review, objective records of progress, means of computing and plotting improvement from day to day, and other devices found in a score of studies to contribute to economy and interest in learning.

b. Diagnosis, testing, check-up. The better workbook organizations, whether published alone or embodied in a text, include a carefully-planned program of materials organized to diagnose, check up or test ability and difficulty. These materials simultaneously teach and test. The tests often take a form which yields a diagnosis. They may or may not utilize statistical norms. They are often of such a character that any failures, in and of themselves, suggest difficulties or weaknesses which, being detected at once, can be corrected before they become fixed difficulties. The better forms are often so embodied in an enjoyable activity that the pupil is unaware of being diagnosed or tested. Thus, diagnostic check-up becomes an intrinsic component of the daily learning activities. In some cases, tests similar to those now usually published separately as "standardized tests" for which "age" or "grade" scores and the like have been constructed, are included in the workbook program to appear periodically in the form and at the time when they will be of greatest service. In general, then, the workbook plan is designed to include a program of diagnosis and testing worked out to be as relevant as possible to the course and as useful as possible to the pupils.

A feature of many workbook plans is organization of activities arranged to enable the pupil gradually to learn to diagnose his own difficulties and to use the available means of remedying them. Indeed, some workbooks are carefully organized to foster the development of all the important techniques of self-education.

c. Review. Most workbook organizations include a program of review activities. In the better instances, these workbooks include devices designed to make review as economic, effective and interesting as possible. They may include diagnostic materials constructed so as to indicate when mastery has been achieved sufficient to insure the desired degree of permanence in learning, and thus to forestall unnecessary over-learning. In many instances, the review serves the added purposes of integrating learnings on the basis of new relationships of material previously learned separately and of effecting useful transitions to forthcoming materials. The provision of review in workbook

form has been justified by experimental discovery of the fact that few texts include sufficient material to insure desirable degrees of permanence. On the whole, the supplementary review activities have proved highly serviceable.

d. Further uses of material. Many workbooks feature various follow-up uses of material and items previously mastered. The additional activities may take the form of problem-solving. The problems may require reorganization, judgment, reasoning, imagination, or other activities primarily mental, or application of data or skills to many practical issues or the use of the learning in various types of practical, artistic, dramatic, constructive, exploratory or other projects. In this way, the workbook attempts to encourage and guide the pupil in reaching a state of ability to use what he has learned in meeting real situations rather than merely a state of ability to recall isolated information and skill. Along this line lies the possibility of cultivating the techniques of judging, reasoning, inventing, imagining, planning, and otherwise making intelligent use of what is learned. In this area is to be found perhaps the most significant possible contribution of the workbook policy. Although there is much room for improvement in realizing this subtle purpose, there is also some highly gratifying evidence of achievements already attained.

Assumptions Underlying the Workbook Idea

The preceding paragraphs give only certain general purposes most commonly sought in workbook materials now in print. The form of publication, and to a considerable extent, the character and purposes of the content are determined by present-day practical conditions. The workbook policy of tomorrow will undoubtedly be revealed in very different form. Since more adequate portrayals of present-day materials and trends and future possibilities are contained in other chapters, it seems desirable to confine the remainder of this report primarily to a psychological and educational appraisal of the workbook idea.

Workbooks Decrease Oral Instruction

Fundamentally, the development of the workbook represents an effort to relieve the teacher of as much as may seem desirable of the enormous burden of oral instruction. The conventional teaching method is a heritage of the days when printed teaching materials were few, highly condensed, difficult, dull, expensive, and otherwise limited for educational purpose. Under these conditions, the teacher had to resort to word-of-mouth teaching; she was forced to depend upon oral instruction, oral explanations, oral directions, oral testing and examination in all subjects and activities including even the simpler skills and subjects. As the list of basal subjects and skills increased, the teacher found that it required practically all her time to teach the "fundamentals" by oral methods. In her effort to embrace the modern theory of education, which sets up as objectives the comprehensive study and guidance of individual personalities, and the induction of children to an increasingly widening and complex range of information and experiences, the teacher has found herself bewildered, if not exhausted, by the demands on her time and energy. Under conventional methods, she has been forced to choose between mainly devoting herself to teaching the traditional subjects or to effecting personal development or doing both inadequately. The development of the workbook idea is one of the major contributions toward the solution of this problem.

Justification

The workbook idea is based on the assumption that printed materials can be devised which will enable children to learn with ease, speed and high

quality, and with little assistance from the teacher, much that has heretofore been laboriously taught orally at the cost of much time and energy by the teacher. More than a quarter century ago, Thorndike pointed out this possibility on several occasions, as in the following passage:

> "On the whole, the improvement of printed directions, statement of facts, exercise and other books, is as important as the improvement of the powers of the teachers themselves to diagnose the condition of pupils and to guide their activities by personal means. Great economies are possible by printed aids, and personal teaching should be saved to do what only it can do. A human being should not be wasted in doing what a dozen sheets of paper .... can do. Just because personal teaching is precious, it should be saved for its unique work."

The main justification of the workbook plan is to be found in the fact that it relieves the teacher for other educational services. It would be justified if it proved to be a moderately satisfactory substitute for oral instruction. The workbook, however, is in theory, and has proved to be, in fact, superior to oral teaching in several fields and various respects and is still capable of much improvement. We may address ourselves at first to these major points.

Workbooks Help Teachers Adjust to Individual Differences

Learning by means of printed workbook and other material is, in the first place, not limited to the slow pace of oral instruction. The average rate of speaking is about 140 words per minute. Children learn quickly to read more rapidly. In the intermediate grades, reading may attain from two to four or more times this speed.

The workbook, printed or pictorial matter, is permanent and not evanescent like the teacher's oral words. Under the oral type of instruction, the teacher must repeat the lesson or neglect those pupils who were absent or who failed to hear or understand or remember. A large proportion of the cases of failures, difficulties and slow progress in learning are the results of such omissions in the course of learning. The printed material, on the other hand, can be studied at any time or place as often as necessary.

Workbook materials may be nicely adjusted to individual differences within a class, whereas oral instruction is intrinsically poorly adapted to individual needs. At whatever speed a teacher may talk, it can be optimum for only a portion of the group, whereas a workbook can be read by each child at the rate most suitable for him. With workbook material, a pupil may fit the length of the study period to his needs, he can stop to ask for special help on a difficult item, he can test his understanding at will, he can skim, re-read, review, skip, and otherwise attack the material in the most useful learning manner. This adaptability and flexibility depends, of course, upon the proper construction of the workbook material; but our point at this time is that theoretically, printed materials offer the possibility of assuming forms that are highly self-manageable and adaptable to individual needs.

Workbooks Develop Initiative

A significant, probably the major, advantage of the workbook policy is to be found in the fact that whereas oral instruction tends to teach children how to be taught, the workbook is highly suited to the policy of inducing pupils to learn how to learn by themselves. The oral method encourages, if it

does not force, the pupils to wait to be told what to learn, how and when to learn, and how to find out whether they have learned. What they learn is really how to respond to oral teaching -- how to be taught. Teaching children how to be taught by oral instruction is something very different from enabling them to learn how to educate themselves. The workbook policy can, and often does, take a form which enables the pupil to assume as much responsibility for his own learning as he can, to diagnose his own successes and difficulties, and to decide when the aid of the teacher is needed. In this plan the teacher is really an expert or supervisor rather than a teacher in the conventional sense. The plan gives her an opportunity to acquire the skill essential for guiding the pupil in his gradual mastery of ability to educate himself, at least along many lines. The failure of the predominantly oral method to produce independent ability to manage one's own learning is one of the most expensive and serious weaknesses of the older programs, which modern workbook organizations can and should overcome. However, the whole art of construction of fully self-teaching, self-explaining, self-diagnosing, self-interesting material for young learners of various subjects and skills is still far from a highly expert stage.

The Problem of Expense of Printed Materials

So impressive to many school officers is the item of expense of what seems to many students to be the advisable -- not to say, ideal -- types of printed materials for learners that a few words should be addressed to this matter. It is estimated that the average cost of all school books in American schools is less than one dollar per child per year. It rarely amounts to two per cent of the total costs of education in any public school system. Compared with the costs of time spent by teachers in teaching what children could learn more efficiently by themselves with the aid of workbooks, the expenses of these printed materials would be almost trifling. The amount of printed teaching materials could be tripled for the money that would bring a barely perceptible increase in oral instruction. Under oral teaching, moreover, the cost is by no means limited to teacher's time. To illustrate: In the teaching of primary reading, the conventional series of readers provides only about one-third of the amount of printed material essential for bare mastery of the words by the average child. Instead of the forty reappearances of each word, such a program provides about fourteen. The slower children need even more practice. Accordingly, teachers are required to spend nearly forty per cent of the total reading-teaching time in various forms of isolated word study. This not only takes much of teacher's time and forces pupils to engage in very narrow activities, but also usually produces a considerable expense for supplementary drill material, such as teacher-made word, sentence and phrase cards, mimeographed and stenciled matter, blackboard products, individual seat-work material, and so on. Frequently these materials alone rival the costs of the much superior workbook and other supplementary material, at least when to the costs of raw materials, the expense of the time of teachers, assistant teachers, mimeograph operators, and others is counted.

For reasons already given, especially their adaptability to individual differences, printed instructional materials have proved to be notably useful in enabling children to succeed who would, under mass oral instruction, have become seriously retarded or have failed. Whether the school's policy is to promote such children, handicapped with their difficulties, or to have them repeat the grade, and whether they are in the end kept in school until they have reached a specified level of attainment, the cost of avoidable failure to the individual and the community is enormous. To assert that such retardation does not increase the costs of schooling is, of course, to treat schools not as an educational institution but as a factory, and even a factory would consider

products falling below its standards or a process which took twice as much time to produce results of a certain standard as losses to be avoided. In any sensible system of cost accounting, the demonstrated merit of abundant workbook material in reducing failure and increasing the speed and ease of learning the desired information and skills would provide ample justification in terms of economy.

The Workbook Idea and Textbooks

Before concluding this chapter, the reader should be reminded again that the development of the workbook is the result of an effort to make printed material more economical and serviceable to the learner. Many readers will be aware that some progressive thinkers have severely criticized the character and use of textbooks, assigned lessons-to-be-learned, conventional tests and other printed matter. In this connection it should be stated that the criticisms of progressive theorists and of persons interested in the workbook idea have been in many respects identical, although different solutions of the problem are suggested by the two groups. Certain progressives have despaired of satisfactory reform of the textbook and have advocated their abolition, whereas some of the workbook investigators have believed that printed materials may be made one of the most educative tools, capable of producing that saving of the time and energy of both teachers and students which will make the progressive program possible.

Final Warnings

In enumerating certain advantages of the workbook material it should not be implied that printed materials provide the best means of doing everything that a modern philosophy calls upon the teacher to do. The plea merely is that what can be -- all things considered -- satisfactorily done by a few printed pages should not be done by the teacher, whose time and energy should be conserved for the things which can only be done by personal means. It should also be urged that many forms of learning can be fostered more satisfactorily by means of direct observations of things and events, by mechanical demonstrations, by still and motion pictures, by sound-motion pictures, by constructive, dramatic, artistic and other enterprises and by the use of many other mechanical devices. In connection with these possibilities it should be remembered, however, that reading materials may frequently effectively replace oral instruction before, during and after other educational activities. Indeed, an important project for education in the future is the discovery and correlation of the educative possibilities of all sorts, including the new types, of teaching and learning devices.

CHAPTER V

TEACHERS' USE OF WORKBOOKS

Angela M. Broening, Baltimore Public Schools

The Situation

"Recommended to accelerate progress with normal pupils, to aid slow pupils, to aid retarded pupils, to save money and to insure success," claims an advertisement of a reading workbook. "Develop good arithmetic habits from the beginning, provide accurate diagnosis of arithmetic disorders - give practical help for eliminating failures" urges another advertisement. "I like English now", say the boys and girls who are using happily a pupil activity workbook. Why is the teacher's attention attracted by such workbook advertisements? The reason is obviously that they promise relief from the pressure of experimental and empirical evidence concerning pupil differences in interests, capacities, achievement, learning rate, vocational goals, etc. Individualized instruction, however, in the increased size of classes becomes largely dependent upon instructional materials. Furthermore, curriculum research activities have established the futility and wastefulness of individual teacher preparation of all of the diagnostic drill, study-guides, and contemporary life materials which she will need for her pupils. It is now professionally respectable, even commendable, to utilize intelligently selected commercial instructional materials.

Benefits

The Practice Test

The teacher's experience in trying to create practice material with which to follow up diagnostic test results reveals that something more scientific and systematic than a day by day preparation is necessary to provide for the various pupil strengths and weaknesses disclosed in tests. On the basis of experience, and in some cases experimentally controlled investigations, teachers find that an adequate workbook of the practice type will

(1) tend to center the pupil's attention upon a desirable and attainable goal
(2) state clearly what the pupil is to do
(3) isolate the specific elements in the total skill
(4) utilize all relevant motives for learning the association being fixed
(5) provide sufficient repetitions of each element so as to give adequate control of it
(6) give diffuse practice in related skills previously learned
(7) afford check-ups to assist the pupil in seeing how near he is to the goal and to help him in diagnosing a specific difficulty that is interfering with his mastery
(8) allow for differences in rates of learning
(9) provide for natural situations in which the skill will be reviewed and
(10) set up a new situation in which the pupil will apply the skill.

The Study-Guide

Not only is drill to be individualized. All learning activities and instructional materials must be selected with respect to individualization and enrichment. An opportunistic use of oral discussions, textbooks, library

books, and visual materials, has not met the challenge of the failing or of the bright pupil. Workbooks which attempt an organization of experience on the unit or the activity plan grow naturally out of the need of reaching every pupil in a class. For this purpose, teachers find the study-guide type of workbook must

(1) stimulate the abilities and interests of each pupil
(2) reveal to the pupil the immediate and deferred values of the subject matter; tap genuine interests; arouse an urge to carry out the assignment
(3) state clearly the directions to pupils; afford variety in learning; assume only skills which pupils may reasonably be expected to have
(4) divide the unit into psychologically acceptable sub-units
(5) encourage the pupils to add questions, suggestions, activities of their own
(6) challenge bright pupils to enriched experience through special reading and additonal observation of first-hand data, without discouraging less bright pupils
(7) provide natural situations for individual reports snd open-forum discussions
(8) utilize pupils' special abilities in art, language, etc. and
(9) provide checking devices ard standards of attainment.

Essentials in Successful Use

Having selected the best available workbook, the teacher has then to devise ways of utilizing it effectively. Her success in its use will depend upon her

(1) knowledge of what the book contains, how it is organized, and when it will be helpful to a given pupil or group,
(2) provision for a time in which pupils can use the book under her guidance ard independently,
(3) plan for checking pupil progress, and
(4) recognition of opportunities for socializing individual effort and achievement.

Program

Analysis of the Workbook

From a careful study of the contents of workbooks, the teacher often finds that more than one workbook will be needed to furnish enough practice on a specific element. Many times workbooks are not indexed in sufficient detail. The teacher increases the effectiveness of her use of such workbooks when she makes an index that cross-sections the material as her pupils' needs or local course of study attainments will require it. From such a supplementary index she is readily prepared to assign to any pupil (or to have him find them for himself) only the exercises from which he can benefit.

Preparation of Pupils

An important first step is introducing the book to the pupil. Workbooks differ in the methods used by the authors to win the pupil's will to learn. Some books require more motivation from the teacher than do others. All are helped by the attitude the teacher demonstrates when the pupil first receives the workbook.

In one workbook the pupil's will to learn is challenged with this bold-type headline:

"THINKING AND THEMES
To Be Read by Students for the Fun of It, Before Work Begins"

Then an anecdote about Dumas brings out the fact that giving one's wholehearted attention to a venture is the surest way to have it succeed. Emphasis on the all-the-way-through-life-need of studying italicizes the idea that acquiring efficient habits of study will save the individual grief while in school and later in adult life. A simple analysis of the fundamental study habits and an explanation of the value of utilizing constructive criticism, prepare for the practice exercises which set up as a student's aim (1) "to recognize the plans used by the writers of the books you read, (2) to make plans of your own - logical outlines for your guidance in building oral and written compositions, and (3) to make useful notes from reading and lectures." Then follow interesting stories (and non-fiction) which, as the pupils say, "make you feel like reading them!" The teacher can well afford the time for an oral discussion through which to create a favorable attitude toward the exercises in this workbook.

Another workbook of the practice sort will require a different motivation for practice. The preface is not to the pupil, but to the teacher who is to administer a diagnostic test, to let the pupil see what he needs to learn, to assign a pupil remedial exercises only on the particular abilities in which he demonstrated weakness, and to retest after remedial instruction. In extreme cases where mastery is not obtained, the teacher will need to give additional practice and a third test (these not supplied by the author.)

In the plan-of-study type of workbook, the teacher's introduction is an appreciative launching of the unit or activity. Discussion of relevant real and vicarious experiences encourages the pupils to raise questions and to reveal interests which give a clue as to a point of contact. Then it is that the pupils have the delightful illusion that the workbook was written especially for them. This introductory emotional appeal sets the pupils free to choose activities, reading references, and rate of performance consistent with their interests, needs, and capacities.

Trial Under Guidance

An initial period of having a pupil or a homogeneous group try out the workbook under teacher observation is essential even when the book is of the so-called "self-teaching variety." This try-out period has disclosed an occasional need for supplementary directions for slow pupils, lengthening the time for the average pupil to complete the exercise, and eliminating certain steps for the bright pupil. The teacher contributes to the workbook in making these adjustments.

Provisions for Use

The teacher show resourcefulness, too, in her provision of opportunities for pupils to utilize the book. After some directed practice as an integral part of a unit, pupils can use certain types of workbooks at home, in independent study periods in school, and in the marginal time when the teacher's attention is being given to other pupils, or to administrative details. Providing practice while the pupil is interested in improving his skill challenges the dynamic teacher to release the student's time for independent use of the book.

Perhaps, however, the best contribution the teacher makes to the workbook is to delete the material that becomes obsolete. Workbooks that were printed "to be used up" in one term, could be frequently revised. In the economies of the depression, however, pupils are often not permitted to write in the workbook, thus making it last longer. Here is where the teacher needs to do some critical planning. In the field of English usage, for example, many workbooks stress the correction of usages which are now acceptable; some which are highly controversial, and others which are still significant for cultivated speech and writing. The teacher serves the pupil best when she has him practice only those items required in acceptable current usage.

Motivation

Interviewing the pupils about their success and their failures, having the pupils keep individual progress graphs, and holding "congratulation conferences" in which individuals receive social approval for sustained and successful effort are means used by teachers to make workbooks effective.

Tests for Teachers

Since the chief value of workbooks is to individualize instruction within the practical limitations of class organization, the teachers' use of the workbook may be evaluated through (1) her intelligent selection of the material appropriate to her purpose and (2) the flexibility with which she adapts it to the individual needs of her pupils. Wherever these two tests are satisfactorily met, the full benefits of workbooks -- increased efficiency in pupil learning activities and the release of the teacher from unproductive drudgery that she may have time to give stimulating pupil assistance -- are satisfactorily achieved.

CHAPTER VI

CURRENT USES AND EFFECTS OF WORKBOOKS

Bess Goodykoontz, Assistant U. S. Commissioner of Education

Types of Workbooks

Workbooks are of such varied form and function that any discussion of the extent of their use or effectiveness must necessarily follow some cataloguing of their most common types. Examination of current practice discloses at least the following types in terms of functions:

1. A series of lesson assignments planned to accompany a specified textbook, supplying suggestions or directions to the pupil on what to read, what to do, etc., which might otherwise have been left to the teacher's presentation.

   Example: "Self-Directing Geographical Notebook". Webb Publishing Company, Oklahoma City, Oklahoma.

   "This is a series of notebooks worked out in close contact with classroom conditions with the following aims definitely in mind.

   1. To relieve the teacher of much of her lesson planning and to make the pupil self-directing to a great degree.
   2. To follow definitely and specifically the ADOPTED TEXT.
   3. To accustom the pupil to an organized method of attacking his lessons.
   4. To bring the pupil into a habit of mastering his work in a large unit.
   5. To give more emphasis to thought questions."

2. A series of practice exercises, or tests, designed to accompany a specified textbook, supplying material supplementary to the textbook but closely related to it.

   Example: "The Work-Play Books." The Macmillan Company, New York, N.Y.
   Third Reader. Work Book to accompany "Make and Make-Believe."

3. A series of lesson assignments planned to present a desirable course of instruction for some unit of subject matter, including within itself a variety of suggested readings and activities, so that the series can be used with any textbook or reference collection.

   Example: "Workbook in United States History for Higher Grades." American Book Company, New York, N.Y.

   "This Workbook in United States History for Higher Grades comprises eight units, subdivided into a total of forty-eight topics. Bibliographies, outlines, study activities, check-up questions, exercises, maps, charts, tests, and statistical tables for the use of pupils are given. . . . ."

   "This Workbook provides a guidance outline of the course in American history, a sort of summary or 'bird's-eye view" of all you are to study during the year. It does not take the place of a textbook but only guides you in reading and understanding the textbook and other volumes used in the course."

4. A series of practice exercises, or tests, designed to provide supplementary material equally serviceable in the use of any text or course of study.

   Example: "Arithmetic Work-Book - Fifth Grade." Scott, Foresman and Company, Chicago, Illinois.

"A series of 37 standardized drill-exercises on the essentials of fifth-grade arithmetic, together with study units on the persistent difficulties, and provision for extra practice on these difficulties.

"This Work-Book provides drill and problem work to supplement the classroom use of any good arithmetic textbook with fifth-grade pupils of average ability. Special provision is made for individual differences."

Purchasers' attitudes.

As to which of these four types is preferred by users, or which is in most common use, it is difficult ot discover. Some evidence is provided in the statements on purchasers' attitudes made by officials of eight publishing companies[1] which supply a large proportion of school textbooks and which also publish workbooks.

Question: Do purchasers prefer a workbook which is prepared to accompany a certain textbook?

Answers:

Publisher 1. No

Publisher 2. There is great difference of opinion, some teachers preferring one, others the other.

Publisher 3. Yes, if it fits the textbook that they are using and they like the textbook.

Publisher 4. Yes

Publisher 5. Yes. Dangerous to be categorical. Some of our successful workbooks, built on one text but giving references to several others, may owe part of success to this feature.

Publisher 6. No reply.

Publisher 7. Our judgment as to what purchasers prefer is, of course, largely colored in any given case by what we have to offer. In the main, we would be inclined to favor the theory that development and drill material should be closely geared together. This would seem to favor the idea of workbooks prepared to accompany certain textbooks. On the other hand, we have had phenomenal success with one series of our workbooks which are general and for use with any textbook. Here, as in probably every other case, the deciding factor is our ability to convince the purchaser of the quality of our product rather than any preconceived notion in his mind as to which form is preferable.

Publisher 8. No reply.

Question: Do purchasers prefer a general workbook, which may be used with any textbook?

Answers:

Publisher 1. Yes

Publisher 3. In some cases.

Publisher 6. Our workbooks are of this type with one exception.

Any lack of enthusiasm in these replies for the general workbook which may be used with any textbook is counterbalanced by another publisher who specializes in the publication of workbooks, whose sales totaled more than 2 million copies of workbooks during 1933, and who reports a decided preference on the part of purchasers for the general workbook.

---

[1] Questionnaire return from officials of eight textbook publishing companies on "The Extent of the Use of Workbooks."

Extent of Use of Workbooks

Evidence on this point is scattered, but points definitely to a phenomenal development of the practice of using workbooks on all school levels. Some of it is found in the listing of new workbooks in the Education Index, in the inclusion of workbooks in schools' purchase lists and courses of study, in an increasing number of articles in education journals pointing out both the advantages and the dangers in the use of workbooks, and in reports of experimental studies to determine their worth.

Subject-matter Fields in which Workbooks are Available

Replies from eight publishers of texts and workbooks list 22 different subjects in which they supply workbooks, with science, history, English, arithmetic, spelling, geography, algebra, and social studies leading.

In a questionnaire study in which he received replies from 245 users of workbooks, Goodrich(18)* summarized for nine subject-matter fields the number of persons using workbooks, the number of users abandoning workbooks, and the number of persons experiencing difficulty in finding satisfactory workbooks.

Subject-matter field	Number of users of workbooks	Number abandoning workbooks	Number having difficulty finding satisfactory workbook
Arithmetic.....	129	22	4
History.....	103	17	24
Reading.....	88	5	13
Science.....	81	9	11
Geography.....	80	22	24
Elementary English.....	79	17	23
Secondary English.....	76	13	15
Secondary Mathematics..	52	12	12
Foreign Languages.....	27	8	17

The number of different subjects in which 220 individual schools were using workbooks is also shown by Goodrich.

Number of subjects	1	2	3	4	5	6	7	8	9
Number of schools using work books	24	42	51	36	24	24	9	4	6

Number of Workbooks Published

No complete answer can be given on this point without securing information from every publisher of workbooks. This it has been impossible to do. Replies from eight publishers of workbooks however give edidence as to (a) the extent to which publishers of textbooks are engaged in supplying workbooks and (b) the school levels on which workbooks are most numerous.

*Numbers in parenthesis refer to entries in the bibliography in Chapter VII

Number of Workbooks Published

Publisher Number	For elementary schools	For secondary schools	For College	Total
1	56	21	1	78
2	77	16	6	99
3	14	8	1	23
4	6	39	0	45
5	13	34	0	47
6	12	7	0	19
7	24	25	3	52
8	81	10	0	91
Total	283	160	11	454

It should again be observed that this total of 454 workbooks is that reported by only 8 publishers of textbooks. On the other hand another publisher, who believes in the efficacy of the general workbook not designed to accompany a specified textbook, reports 123 workbooks for elementary schools and 22 for secondary schools. Another company lists more than 130 in its price list.

In its census of manufactures the Bureau of the Census reports periodically the number of textbooks published for school use and the number of "pamphlet texts" for school use. Pamphlet texts are not defined. They probably cover laboratory manuals, pre-primers, supplementary readings, "Classics" series, and other types of paper-bound instructional materials besides workbooks. However, the totals may be given here for the light they shed on the fluctuations in pamphlet publication for school use over a nine year period.

Number of Books and Pamphlets Published[1]

Number Textbooks (for school use)	78,641,843	83,849,664	80,189,935	65,292,430	58,070,083
Number Pamphlets (Texts - for school use)	27,661,513	22,824,621	39,696,158	24,706,253	14,995,206

Sales of Workbooks

Three publishers reported the total number of workbooks sold by them during 1933 (1934 for one) as one hundred nine thousand, five hundred eight thousand, and two million five hundred thousand, representing 7.7 per cent, 20½ per cent, and 10 per cent of their total textbook sales respectively. Another who did not give the total sales indicated that workbook sales repre-

[1]Figures taken from Census of Manufactures: 1925, 1927, 1931. Printing and Publishing and Allied Industries; and Census of Manufactures: 1933. Release (Industry Nos. 508 and 510, January 4, 1935.

sented by laboratory manuals, instructional or practice tests, and other drill material, were 11 per cent of his total sales including standard tests. Evidently the publication of study guides of one kind or another which represent annual replacements on the part of schools is responsible for a significant part of the business of supplying schools with books.

The question How many textbook users use the accompanying work books? is interestingly answered by one publisher as follows:

"We have a book called -------- for a beginning foreign language. As a service item for teachers using this book, w have published a little pamphlet called ----------. I assume this would come under the category of a work-book. It can be used only by teachers using our textbook. Being prepared by the authors of the textbook itself, it presumably is of equal quality. It seemed to me that it might be of some significance to make a comparison of the number of books of this sort which we sell and the sales of the work-books which accompany them. My thought was that this might at least furnish some evidence as to the number of users of these books who also use the work-book.... However, the number of copies of a textbook sold in a given year does not give any index as to the number of books in use during that year. Before giving you any percentages, therefore, it is necessary to state on what premises they have been based. Here are the assumptions I have used:

1. The average life of a cloth-bound textbook is three years.
2. The sales for the last three years are, therefore, a rough index as to the number of books in use in any given time.
3. Since work-books are destroyed in use, the sales in any year indicate pretty closely the actual number used.
4. In any year, therefore, the percentage of work-book sales to the the sales of the textbook which it accompanies, during the last three years, would reveal roughly the percentage of users of the textbook who used the accompanying work-book.

To the extent to which these premises are acceptable, the following table may be of interest:

Percentage of Textbook Users Using Accompanying Workbooks

a 8 work-books accompanying elementary school textbooks
Median - 20.9% Average - 22.2% Range from 13.2% to 35.1%

b Work-books accompanying 12 high school textbooks
Median - 21.2% Average - 21.8% Range from 5% to 42.8%

In other words, for this group of 20 textbooks for which workbooks have been prepared, of every five students who use the textbook only one also used the workbook.

Effectiveness of Workbooks as Instructional Aids

The rapid spread of the practice of using study guides either in workbook form or in one of the many forms of teacher-made individualized lesson sheets has been accompanied by experimentation on the part of teachers, authors, publishers, and others to attempt to determine their effectiveness. The following pages summarize the methods and results of 12 experimental studies, 9 of which are in mathematics, 1 in geography, 1 in American government, and 1 (a series of studies) in physics.

They differ naturally in the form of study materials used. Some are "tests and drills," some are whole "teaching units," some accompany a specified text, some are "practice sheets." In 7 of the experiments the materials used are designated "workbooks," and are commercially published; in 4 of them the materials are "guide sheets," prepared by teachers or the investigator; the other experiment used a workbook prepared by a curriculum committee to accompany a new course of study. The findings are not expected to be strictly comparable, but since in each case the experimenter attempted to measure the effectiveness of learning by means of a series of study guides (bound or unbound, purchased or home-made), a comparison of their conclusions may be of interest.

The following points may be deduced in summary from the 12 studies listed:

1. In every one of the 12 studies the evidence showed beneficial results from the use of workbooks. These varied from "slight difference" to consistent gains" and "distinctly beneficial."
2. In 2 experiments workbooks appeared to be particularly effective for pupils of higher mental ability; in 2 the pupils of lower mental ability appeared to profit more from the use of work-books than did the brighter pupils; and in one study all degrees of intelligence appeared to benefit alike from the use of the workbooks.
3. Though the benefits ascribed to the use of workbooks were usually in terms of higher scores on standardized tests, other benefits enumerated included "increase in power of self-direction," "helps in retention,""skill in fundamental processes," "reasoning ability," "solving problems.

EFFECTIVENESS OF WORKBOOKS - A Summary of twelve studies

Study*	Subject	Grade	Method				Conclusions
			Basis of Group Selection	Number pupils	Materials	Methods	
6	Arith-metic	6	All pupils in classes	117 6B 224 6A	Commercially published "Test and Practice Sheets"	All used test and practice sheets in addition to texts	1. Pupils gained from twice to four times as much as the expected four months gain in fundamental processes. 2. The practice sheets used cause greater improvement in fundamental processes than in reasoning. 3. All degrees of intelligence benefited alike.
9	Geom-etry	1st year	Matched by I.Q. as far as possible and equated according to arith. mean of I.Q.'s of the group in each case	30 prs. 28 prs. 2[illegible] prs. [illegible] Z group	Work books by author of text used	(Experimental) E group used work book for drill and review	1. Three groups of the four using the work book showed greater gains than the control groups.
13	Algebra	1st year	2 paired groups of 14; age, I.Q. algebraic ability	28	Mimeographed study guide sheets	E group used study guide sheets; C (Control) group used usual textbook method	1. Consistent trend favoring study guide group though differences were not statistically significant.
19	Arith-metic	5A,6	2 equivalent groups of 35 pairs: arithmetic achievement, I.Q.	70	Work book prepared by author of text used	E group in each grade used work book in addition to textbook	1. No significant difference but some evidence that work book helps in retention. 2. Students of higher mental ability did better in experimental group

* The numbers under "Study" refer to the corresponding references in the bibliography in Chapter VIII.

Summary (Continued)

Study	Subject	Grade	Method				Conclusions
			Basis of Group Selection	Number Pupils	Materials	Methods	
23	Physics	J.S.	Pupils matched to form equated groups: age, grade, sex, score on pre-test	1125 pupils in 12 schools 280 pairs	Work book prepared to present 19 teaching units	Only difference that E group used work sheets in addition to text	1. 8 experiments showed consistent differences favoring E group, 3 significant; 4 experiments favored C group, 2 significant; 2 experiments showed little difference. 2. Work sheets tend to help pupils in situations like those studied, but are not indispensable.
25	Algebra	9	27 pairs 1st yr.; 25 pairs 2nd yr.; mental ability, achievement.	104	Commercially published 1)Tests & Drills 2)Unit Work Books in Algebra	E group used drills and exercises in addition to usual method	1. Experimental group made greater gain than control group in 8 of 10 achievement tests, though gain not statistically significant.
27	Math.	8	Pupils paired and 4 groups of 61: I.., age, standardized and teacher-made test on first unit	244	"Study guide"	Same except E group used study guide.	1. Consistent gain by experimental group. 2. Experimental group showed increase in power of self-direction.
30	Geography	6	18 pairs matched: I.Q., age, sex, geography grades	36	Work book published by same publisher as text-book	For 23 weeks, instruction same with work book additional for test group	1. Neither test group (Experimental) nor control group showed constant superiority. 2. Text group learned more factual material than control group. 3. Students of higher mental ability did better under textbook method and those of lower mental ability did better under work book method.

Summary (Continued)

Study	Subject	Grade	Method				Conclusions
			Basis of Group Selection	No. pupils	Materials	Methods	
33	American government	Senior high school	All pupils of 2 classes; compared and found equal: number, grade, previous civics training, repeaters, age, I.Q., reading ability.	E 51 C 48 99	Work book prepared by author of text	Experimental group averaged 15 min. per day on work book; control group used entire 30 min. of study period for text and references	1. No significant differences, but slight difference in achievement in favor of experimental group.
27	Algebra Algebra Plane Geometry	1st yr. H.S. 2nd yr. H.S. 3rd yr. H.S.	2 groups of each method: intelligence, algebra prognosis, reading tests	86	Work book published commercially	Experimental group used part of recitation period for work books	1. In all 3 classes experimental group surpassed control group, both in mechanical operations and in solving problems. 2. Work book appears to help lower level of the groups relatively more than the upper level.
40	Algebra	1st year	28 pairs: age, intelligence, achievement in algebra	56	Detailed study guide sheet for each unit made by investigator.	Experimental group had guide sheets at beginning of each of 7 units; control group had daily oral assignment.	1. No significant difference, but a slight tendency in favor of experimental group. 2. Upper quartile of experimental group and lower quartile of control group showed marked superiority over their respective groups in addition and subtraction.
45	Arithmetic	5B 6B 6..	Whole classes, pupils paired: I.Q., age, sex, social level, race	272	Work book made by teachers to follow city course of study	E used work book C did not	1. Work book appeared to be distinctly beneficial in developing reasoning ability. 2. Work book appeared to be ineffective for most pupils in computation.

What People Think of Workbooks.

A wide range of opinion (and sometimes apprehension) as to the effectiveness of workbooks as instructional aids is indicated in the titles of published articles and editorials.(10,12,18,22,23,31,36)* Some writers hold that, properly used, workbooks or their home-made prototype--the work sheet--supplement the best effort of the teacher; other writers imply that good workbooks can themselves assume some of the functions of the teacher. For example, in discussing the usefulness of worksheets as aids in supervised study Howard E. Wilson,(47) himself a workbook author, says that in supervised study the teacher (1) selects appropriate activities and exercises; (2) makes assignments so that pupils know exactly what to do; (3) establishes the "learning situation"; (4) motivates pupils to work; (5) observes, diagnoses, and treats study difficulties; and (6) tests the results of study. He then adds that worksheets may in themselves facilitate each one of these functions.

On the other hand there are those who call attention to the dangers of formalizing instruction, of making "study" a process of writing out answers to questions, of relegating teaching to the simple function of assigning the next exercise, and of encouraging "busy-work" students.

Several authors(6,18,20,30,37)* have secured the opinions of teachers, administrators, and professors of education on the values and the weaknesses of workbooks, a summary of which is presented on the following page. Very evidently many of the statements are based on experience with a certain workbook and cannot therefore be taken to apply to workbooks in general, but the unweighted listing of statements is given for whatever indication they can provide of current opinion in the matter.

Careful examination of the "weaknesses" listed leads one to think that most of them are not unavoidable. Better selection and grading of content appears to be the greatest need, accompanied by a clearer understanding of the functions and limitations of even the best of workbooks on the part of all who work with them. Certainly if half the values soberly listed here can be attained through the use of workbooks they deserve the best efforts in research and experimentation that the profession can provide.

---

*Numbers in parenthesis refer to entries in the bibliography in Chapter VIII.

Values of Workbooks

In developing desirable learning techniques

1. Stimulate interest in reading
2. Establish learning situation quickly
3. Provide for self-competition
4. Allow pupils to work out own problems
5. Provide diagnostic testing program
6. Provide for developing good study habits and skills
7. Create favorable pupil reactions
8. Encourage pupil activity

In presenting desirable subject matter

1. Provide good amount and quality of drill material, better than teacher selection
2. Provide sufficient supplementary material
3. Build up specific vocabularies
4. Provide suitable material for home study

In providing individualized instruction

1. Pupils progress at own rate
2. Pupils check up on own progress
3. Variety of material provides for individual rates, interests, etc.

In efficiency of classroom management

1. Saves teacher's time for supervision
2. Saves pupils' time in having materials ready to use
3. Simplifies assignment
4. Allows for more scientific grading

Weaknesses of Workbooks

In the theory underlying their use

1. Reduce learning to a matter of doses
2. Make children mechanical memorizers
3. Reduce teacher's initiative, originality, creativeness for specific problems

In their content

1. Faulty analysis of processes or subject matter, not based on research
2. Too many trivial unrelated facts
3. Poorly graded, exercises not cumulative in difficulty
4. Ill-adapted to courses or textbooks
5. Inflexible
6. Formal
7. Lack of extra units for bright pupils

In their use

1. Teachers tend to use exercises in consecutive order or to follow too closely
2. Teachers frequently fail to check on the exercises and to follow up

In mechanical make-up

1. Too large and cumbersome
2. Illustrations poor
3. Expensive

The need for more refined laboratory tests for use in problem cases can be indicated.

At this point it should be made clear that diagnostic tests that are sometimes included in work books are of two types. One type consists of tests whose purpose it is to measure the extent to which instruction is achieving "its desired objectives." It is possible that tests of this kind should not be included in work books. However in view of the fact that they might otherwise not be available, it seems desirable to include them. It is unfortunately true that many of those who have devised measuring instruments have been more concerned with the form of test being devised than with the outcomes of instruction being measured. The result if that tests are lacking for measuring many of the important outcomes of instruction. Authors of work books can render a real service to education by developing diagnostic tests for measuring all of the important outcomes of instruction, including such factors as interests, appreciations, power to use or apply what is learned, insight, purposes, social qualities, and other "intangibles," related to the field dealt with by the work book.

A second type of diagnostic test is a device for determining the reasons why pupils are not achieving the desired objectives. Such tests deal with those factors that may contribute to failure to make satisfactory progress.* A work book, for example, in reading, can provide the essentials of diagnosis in reading as such and can include record blanks which will bring to the attention of the teacher any other associated factors that may have a bearing on the case. The work book can thus be made to serve as a cumulative record of the diagnostic procedures applied, of the facts revealed thereby, and of related information secured from other school sources.

Remedial Measures

In addition to the two kinds of diagnostic tests described above the work book of the future should include the necessary developmental and remedial materials to follow up the diagnosis. When some essential skill or quality is either lacking or is at a low level, the necessary remedial treatment and developmental exercise must be provided. These exercises should be graded in difficulty, ranging from very elementary materials to fairly difficult exercises. Such units of work must be so organized that learning is facilitated and difficult steps are simplified. However, many essential remedial measures cannot be included in a work book. For example, exercises for overcoming physical handicaps hardly have a place in a work book in English. Special work books for remedial practice are a possibility.

The Need for Research

Much research is needed to determine the most worthwhile contents of work books. It must be admitted that relatively little is known as a result of scientific experimentation concerning the comparative merits of various methods of arranging and teaching materials of instruction. The work books of today largely parallel our present curriculum and methods of teaching. The curriculum itself is a residue of experience rather than the product of scientific planning.

---

* See Educational Diagnosis, Thirtyfourth Yearbook. National Society for the Study of Education. 1935.

Chapter VII

THE IMPROVEMENT OF WORK BOOKS

Leo J. Brueckner, University of Minnesota

Previous chapters have shown that, in general, workbooks of various types make a great appeal to teachers and administrators because of their evident possibilities. They have also made it clear that these potentialities are not always realized. It seems wise, therefore, to present in this chapter criticisms and suggestions that seem likely to contribute to the improvement of the workbooks of the future.

Purpose

Every workbook should serve a definite purpose. This purpose should be evident from its organization and contents. At present it is unfortunately true that workbooks often serve no clear purpose. There is no good reason why the specific purpose of each type of exercise in a workbook should not be clearly evident to both pupil and teacher. It is a simple matter to assemble a body of unorganized drill exercises; it is a very technical task to assemble a body of materials with specific, valid purposes in mind.

Individual Differences

In the future, work-books must recognize more completely than in the present the fact of individual differences in pupils. Today there is a definite desire on the part of many to reduce to a minimum the percentage of failure in each grade. The result is that in almost every classroom there is in all subjects an even wider range than formerly in the ability of the pupils composing a class. The teacher is faced with the task of making adequate provision for the varying needs of these individuals. Conventional text books contain material which is adjusted to the level of the typical student in the class. They are therefore quite certain to be too difficult for the slowest pupils and too easy for the brightest. Obviously a text book cannot contain as wide a variety of learning exercises as can a work book. The work book of the future, designed to minister to individual differences, can serve as a valuable means of furthering the individualization of instruction.

Diagnosis

An important service which can be performed by the work book is to provide means for diagnosing the causes of pupil failure to progress satisfactorily. During the past decade there has been a rapid development of techniques of diagnosis. There are available many types of diagnostic tests which make it possible to locate the strengths as well as weaknesses of pupils in such fields as reading, language, writing, arithmetic, spelling, and social studies. These tests are steadily being improved, and their number is increasing due to the recognition of the need for specific diagnosis. Some of the simpler types of tests have found their way into the text books used in our schools. However, it is doubtful if their real place is in a text book. When such a series of diagnostic tests is included within the limits of a single work book, the teacher has available in a compact form some of the essential professional tools that all teachers should learn to apply. Of course authors must use discretion in the selection of the tests they include. Tests of important outcomes, and of specific factors involved in learning, not too difficult for the average teacher to use, are suitable.

Careful research has revealed the most common difficulties and the most faulty procedures of pupils in the various subjects of the elementary school. However, there is lacking any systematic analysis of the cruciality and seriousness of the various faults. There are also undoubtedly many subtle symptoms of serious difficulties which we do not as yet even recognize. We know what the most common faults are but we do not know in most cases which ones are symptons of present or potential serious maladjustment, nor do we know the causes of the specific difficulties they indicate.

The ideal to be striven for in work books is to give teachers a clean cut analysis of critical weaknesses, difficulties, and faults in learning related to the objectives of instruction to be achieved, supplemented by developmental and remedial materials which are of demonstrated worth in removing or averting the deficiency and in developing desired strengths. These materials must recognize all of the desired outcomes of instruction, and must not be limited to the relatively narrow body of outcomes now dealt with in most of our work books. With such an equipment teachers could attack the problems of remedial instruction with the same assurance that a doctor has when he uses the validated techniques of diagnosis and treatment established by medical science. A work book of this kind would thus serve both as a record of remedial measures applied and as a measure of their effectiveness.

Problems

Various problems arise when one considers the possibility of using work books for diagnostic and remedial instruction. How can one devise diagnostic tests for many of the apparently "intangible" outcomes of learning? The work of Tyler described in his book, "Constructing Achievement Tests," presents illustrations of the methods that must be used in developing such tests. Many other new techniques must undoubtedly be invented and perfected.

A second problem is, How can one determine experimentally the developmental and remedial measures that will aid in achieving some of the less definite educational objectives? This question presents serious difficulties because of the fact that the school alone is not responsible for many of the outcomes of learning. The learner is exposed to many influences over which the school has little if any control, such as the radio, the newspapers and magazines, the home environment, and the like. Furthermore each child is a complex of past experiences, aptitudes, and potentialities which in some respects differ from those of other children. It does not therefore seem likely that it will be possible to develop specifics that can be infallible applied to all particular cases.

The relation of the work book to the text book also presents several problems. It seems clear that a work book should not merely provide more of the same kind of material found in the text book. In some fields a work book can serve as a valuable supplement to a text book by providing materials adapted to the needs of pupils who have difficulty in mastering the subject matter because of deficiencies in work covered in lower grades. In other fields it seems likely that a well planned work book may ultimately supplant the present day text book. In the field of spelling there is already available a work book which actually takes the place of a text book. It provides types of activities which are not found in conventional spelling text books.

Summary

In the future, workbooks will prove more effective than at present

1. If every work book serves a definite purpose, related to some desired educational objective.

2. If work books are organized in such a way that provision is made for differences in the needs and abilities of the pupils.

3. If they make available for teachers effective means of diagnosing the strengths and weaknesses of pupils. These diagnostic techniques must help the teacher to discover the extent to which all desired outcomes of instruction are being achieved, and to determine the reasons why a particular pupil is not progressing at a satisfactory rate or level.

4. If the work book includes a variety of developmental and remedial materials of demonstrated value in achieving desired objectives of instruction, to make it possible for teachers to use effectively the facts revealed by their diagnostic studies.

5. If the need is met for extended research to determine valid methods of obviating and of preventing learning difficulties. The ultimate objective should be the discovery through experimentation of specific means for correcting those faults and defects which interfere with satisfactory pupil growth toward the desired goals of education. These corrective methods and devices should then be either included in the work book or be available as valuable supplements of the work book.

Conclusion

Admittedly, the work book is now and imperfect. The fact that it has achieved success in spite of its limitations guarantees that systematic, scientific study and planning will greatly increase the effectiveness of work books and stimulate their continuous improvement. What the ultimate outcome of the use of work books will be, i[illegible] too soon to prophesy.

CHAPTER VIII

SELECTED BIBIOGRAPHY ON WORKBOOKS

Carter V. Good, University of Cincinnati

1. Adams, I., and Cole, R. D. "An Analysis of Algebra Workbooks", Journal of Educational Research, XXVI (October, 1932), 116-131.
An analysis of nine first-year algebra workbooks to determine the drill in mechanics furnished in relation to the stated aims.

2. Asperger, Otto. "The Use of Study Guides as Aids in Learning First-Year Bookkeeping in the Senior High-School." Master's thesis, University of Southern California, 1933. California Quarterly of Secondary Education, IX (October, 1933), 81.

3. Billett, R. O. "High School Pupils' Opinions of the Unit Plan," School Review, XL (January, 1932), 17-32.
An attempt to discover, by questionnaires, the attitudes of a senior high-school group of pupils, instructed under the unit plan for seven months, toward the method used.

4. Canfield, J. W. "Assignment Sheets and Study Guides", Modern Education, IV (October, 1931), 30-31.
A plea, based on theoretical grounds, for the continued use of assignment sheets, study guides, and workbooks in tool subjects.

5. Clemensen, J. W. Study Outlines in Physics: Construction and Experimental Evaluation. Teachers College Contributions to Education, No. 553. New York: Teachers College, Columbia University, 1933. Pp. 154.
Part I discusses the construction of study outlines in physics; Part II records the experimental procedure adopted to evaluate the study outlines.

6. Cooke, Olive. "The Value of Arithmetic Workbooks in the Elementary Grades". Unpublished Master's thesis, Occidental College, 1931.

7. Courtis, S. A. and Vreeland, Wendell. "Individualization of Instruction." Brumfield and Brumfield, Ann Arbor, Michigan. 193 pages.
Part I tells the story of individualization; what it is and how it came to be. Part II gives specific directions; how to individualize through modification of school organizations, writing of lesson sheets, contracts, workbooks, etc., and how such instructional aids are best used.

8. Cressman, E. W. "Workbook Method or Oral Discussion", Journal of Educational Sociology, VII (December, 1933), 250-53.
Concludes tentatively that instruction on moral problems contributes somewhat to the clarification of the moral concepts of junior high school pupils, and that the workbook method seems superior to the oral method, particularly in promoting transfer to materials different from those used in training.

9. Duer, Lillian. "An Experiment Comparing Results under Geometry Workbooks and the Traditional Textbook Method." Unpublished Master's thesis, University of Denver, 1931.
An experiment was carried on for two semesters in which groups were paired on the basis of intelligence and geometry tests. The experimental groups used Welte Knight workbooks to supplement the course of study and the textbook. The control groups used the textbook alone.

10. Elliott, A. W. "This Workbook Craze", School Executives Magazine, LI (September, 1931), 19-20.
A justification of workbooks in terms of their historical development, contributions ot the teaching and learning processes, educational outcomes, and reduction of retirdation costs.

11. Elliott, A. W. "Chapter Two on Workbooks", Ohio Schools, X (September, 1932), 218.
A proposal for the use of a co-ordinated textbook and workbook for each subject, with due regard for the adaptability of workbooks to different subjects and the necessity for low costs.

12. Fox, Guy. "The Workbook; a Tool", Denver Public Schools Bulletin, IV (May, 1931), 4-5.

13. Gainer, J. V. "An Experimental Investigation to Determine the Relative Effectiveness of Two Plans of Teaching First-Year Algebra: A Daily Oral Assignment Plan and a Plan Employing Study Guide Sheets." Unpublished Master's thesis, West Virginia University, 1933.
Describes an experiment covering a period of 14 weeks, conducted with two groups of 14 students each, equated on the bases of CA, IQ, and algebraic ability.

14. Garvin, C. H. "A Biology Workbook." Unpublished Master's thesis, University of New Hampshire, 1933.

15. Gates, A. I. "The Workbook in Practice", School Executives Magazine, LI (April, 1932), 349-50.
A discussion presenting opinions on the definition, description, and advantages of workbook materials.

16. Gillespie, M. A. "A Contract-Plan Workbook for American History." Unpublished Master's thesis, George Peabody College for Teachers, 1933.

17. Gocher, A. M. The Use of a Study Guide in Teaching High-School Literature. Master's thesis, University of Pittsburgh, 1933. Abstract in University of Pittsburgh Abstracts of Theses, Researches in Progress, and Bibliography of Publications, IX, 377-78.

18. Goodrich, T. V. "Is the Workbook a Necessity or a Luxury?" School Executives Magazine, L(April, 1931), 359-61.
Reports the data from questionnaires sent to 245 users of workbooks to determine their opinions concerning the strength or weakness of workbooks. The consensus of opinion is that the workbook is neither an absolure necessity nor a luxury.

19. Hamilton, H. A. "A Comparative Study of the Value of Workbooks in Teaching Arithmetic in Grades Five and Six." Unpublished Master's thesis, West Virginia University, 1933.

20. Harrington, E. E., and Lippert, D. E. "Workbook: What Do People in the Teaching Profession Think of It?" Pennsylvania School Journal, LXXXII (March, 1934), 359-62.

21. Hoff, H. A. "Problems Encountered in Building A Chemistry Workbook and Methods of Dealing with Them." Unpublished Master's thesis, University of Wisonsin, 1932.

22. Hooper, H. W. "Workbooks and Worksheets in High-School Biology." Unpublished Master's thesis, University of Oklahoma, 1932.

23. Hurd, A. W. "The Workbook as an Instructional Aid", School Review, XXXIX (October, 1931), 608-16.
Summarization of 16 experiments, conducted in the physics classes of 12 high schools, to compare a worksheet plan of instruction with a no-work-sheet plan by objectively testing the achievement of two unequated groups, each instructed under one of the plans of teaching for an unrecorded length of time; and by testing the achievement of two groups, equated on the bases of CA, grade in school, sex, and score in pretest, each instructed under one of the plans for an unrecorded length of time. Concludes that worksheets tend to help pupils in the situations studied but are not indispensable.

24. Hurd, A. W. "The Textbook Versus Work Sheets in Instruction", Educational Administration and Supervision, XVII (December, 1931), 661-64.
Summarization of experiments conducted in the physics classes of 14 high schools to compare a textbook-recitation plan or instruction with a special worksheet plan, by objectively testing the achievement of two groups, equated on the bases of CA, grade in school, and score in preliminary tests, and instructed under one of the plans of teaching for 14 days. Concludes that neither plan is significantly superior.

25. Lewers, C. E, "The Value of a Workbook in Algebra." Unpublished Master's thesis, State University of Iowa, 1933.

26. Livingstone, C. R. "The Status of the Workbook in American History in the High Schools of Indiana in 1929 and 1930." Unpublished Master's thesis, Indiana University, 1931.

27. Lyons, C. A. V. "An Experiment to Determine Value in a Study Guide in Learning Eight Grade Mathematics." Master's thesis, University of Pittsburgh, 1933, Abstract in University of Pittsburgh Abstracts of Theses, Research in Progress, and Bibliography of Publications, IX, 404-5.

28. Maxwell, C. R. "Workbook, a Recent Development," American School Board Journal, LXXXVIII (March, 1934), 16.

29. McGuire, E. "Teacher, Pupil, and Workbook," School Executives Magazine, LIV (October, 1934), 46-7.
Considers the workbook as a textbook supplement that yields materials for preparatory drill, practice exercises, and diagnostic procedure. Also lists criteria for workbooks.

30. McKee, K. S. "The Value of a Workbook in Teaching Sixth Grade Geography." Unpublished Master's thesis, West Virginia University, 1932.

31. Miller, E. O. "A New Hazard for Teachers", Common Ground, X (March, 1931), 233-34; Georgia Education Journal, XXIII (May, 1931), 39; West Virginia School Journal, LIX (April, 1931), 268.
A word of caution and advice concerning the disadvantages as well as the advantages of workbooks.

32. Milspaw, B. A. "The Construction and Use of a Study Guide in Biology." Master's thesis, University of Pittsburgh, 1932. Abstract in University of Pittsburgh Abstracts of Theses, Researches in Progress, and Bibliography of Publications, VIII, 356-57.

33. Nelson, C. L. "The Effectiveness of a Specific Workbook in Learning American Government." Unpublished Master's thesis, University of Iowa, 1932.

34. Osburn, W. J. "Educational Medicine", Educational Research Bulletin, X (January 7, 1931), 19-20.
A criticism of workbooks, pointing to the lack of remedial material for specific difficulties, slight textbook-workbook coordination, and failure to provide for individual differences.

35. Porter, E. A. "The Effect of a Study Guide upon Outside Reading in Eleventh Grade English." Master's thesis, University of Pittsubrgh, 1933. Abstract in University of Pittsburgh Abstracts of Theses, Researches in Progress, and Bibliography of Publications, IX, 433-34.

36. Rigg, H. H. "Are We Making Blank Fillers Out of Students?" School Executives Magazine, LI (March, 1932), 329.
A warning concerning the mechanical aspects of workbooks, which contends that their blank-filling procedures are inadequate preparation for the demands of life.

37. Scarborough, J. C. "The Effectiveness of Work-Test Books in Teaching High-School Mathematics." Unpublished Master's thesis, University of Colorado, 1932.

38. Schultz, Elizabeth. "An Analysis of Workbooks in Elementary Algebra." Unpublished Master's thesis, University of Minnesota, 1933.

39. Sharp, R. A. "The Use and Abuse of Workbooks", High School Teacher, IX (January, 1933), 13-14.
A historical account of the origin and growth of workbooks. Indicates ways of correcting mistakes made by publishers and teachers dealing with them. Is favorable to the use of workbooks in school subjects.

40. Smith, Georgina. "A Study of the Relative Efficacy of Two Methods of Teaching Certain Units in First-Year Algebra: A Daily Oral Assignment Method Versus the Use of Study Guide Sheets." Unpublished Master's thesis, West Virginia University, 1933.
Data indicate no significant difference in the effectiveness of one method over the other.

41. Spriggs, L. M. "An Analysis of Seven Workbooks in Geometry." Unpublished Master's thesis, University of North Dakota, 1931.

42. Straitiff, E. V. "A Survey of Workbooks in Arithmetic for the Intermediate Grades." Master's thesis, University of Pittsburgh, 1931. Abstract in University of Pittsburgh Abstracts of Theses, Researches in Progress, and Bibliography of Publications, VII

An Attempt to reveal the amount, nature, and distribution of the content material of 25 arithmetic workbooks for the intermediate grades. Concludes that among the authors there are: Unanimous agreement about placing emphasis on addition, subtraction, multiplication, and division of whole numbers in the fourth grade workbooks; no unanimous agreement about emphasis on any particular type of content in the fifth grade workbook; agreement about placing emphasis on mixed decimals in the workbooks for the sixth grade.

43. Van Liew, C. C. "Can the Workbook be Justified?" School Executives Magazine, LIII (October, 1933), 38-9.

44. Walcott, F. G. "Problems of the Workbook," English Journal, High School Edition, XXII (September, 1933), 574-78.

45. Webb, H. E. "Study of Results of the Workbook upon Progress in Arithmetic in Portland Schools." Unpublished Master's thesis, University of Oregon, 1931.

46. Wesley, E. B. "Workbooks in the Social Studies", Historical Outlook, XXII (April, 1931), 151-53.

Contends that the general workbook in the social studies has not proved its utility, although this generalization is based on subjective opinion, unsupported by factual data.

47. Wilson, H. E. "Work Sheets as Aids in Supervised Study". Historical Outlook, XX (October, 1929), 287-91.

An admittedly subjective opinion approving worksheets as aids in supervised study, based on several years of experience in constructing and using them.